IEEE 802.11a/n Wireless Outdoor CPE

Quick Installation Guide

F3.0.4 Sep. 2011

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About the Quick Installation Guide

This Quick Installation Guide is intended to guide professional installer to install the IEEE 802.11a/n Wireless Outdoor CPE. It covers procedures to assist you in avoiding unforeseen problems.

Conventions

Warning:

- This sign indicates a warning or caution that you have to abide.

Note:

- This sign indicates an important note that you must pay attention to.

Chapter 1 Introduction

Introduction

The IEEE 802.11a/n Wireless Outdoor CPE is a multi-mode last-mile broadband solution for customers like wireless ISP (WISPs) and system integrators. By the nature of complying with the IEEE802.11n standard and featuring high power output, the IEEE 802.11a/n Wireless CPE supports higher bandwidth of up to 300Mbps with longer range for outdoor applications.

The IEEE 802.11a/n Wireless Outdoor CPE can be used as the access point, the customer premises equipment (CPE), the WDS or the AP Repeater. While being as the access point, it can be deployed outdoors to provide outdoor wireless internet service. In the other way to be as the outdoor CPE, it can receive wireless signal over the last mile, helping WISPs deliver internet service to the new residential and the business customer where wired broadband internet service, such as cable and DSL, can not serve in. In addition, the easy-to-install Wireless Outdoor CPE covers 5GHz bands, which features outstanding throughput performance and a cost-effective design that allows users to have the reliable outdoor equipment at the affordable price.

Chapter 2 Preparation before Installation

This chapter describes safety precautions and product information you have to know. Please check this chapter before installing the CPE.

Professional Installation Required

Please seek assistance from a professional installer who is well trained in the RF installation and knowledgeable in the local regulations.

Safety Precautions

To keep you safe and install the hardware properly, please read and follow these safety precautions.

1. If you are installing the IEEE 802.11a/n Wireless Outdoor CPE for the first time, for your safety as well as others', please seek assistance from a professional installer who has received safety training on the hazards involved.
2. Keep safety as well as performance in mind when selecting your installation site, especially where there are electric power and phone lines.
3. When installing the CPE, please note the following things:
   - Do not use a metal ladder;
   - Do not work on a wet or windy day;
   - Wear shoes with rubber soles and heels, rubber gloves, long sleeved shirt or jacket.
4. When the system is operational, avoid standing directly in front of it. Strong RF fields are present when the transmitter is on.

Installation Precautions

To keep the CPE well while you are installing it, please read and follow these installation precautions.

1. Users MUST use a proper and well-installed grounding and surge arrestor with the IEEE 802.11a/n Wireless Outdoor CPE; otherwise, a random lightening could easily cause fatal damage to the unit. **EMD (Lightning) DAMAGE IS NOT COVERED UNDER WARRANTY.**

2. Users MUST use the “Power cord & POE Injector” shipped in the box with the CPE. Use of other options will likely cause damage to the unit.

3. Users MUST power off the CPE first before connecting the external antenna to it. Do not switch from built-in antenna to the external antenna from WEB management without physically attaching the external antenna onto the CPE; otherwise, damage might be caused to the unit itself.

Product Package

The product package you have received should contain the following items. If any of them are not included or damaged, please contact your local vendor for support.

- IEEE 802.11a/n Wireless Outdoor CPE ×1
- Pole Mounting Ring ×2
- Power Cord & POE Injector ×1
- Product CD ×1

Note:

- Product CD contains Quick Installation Guide and User Manual!

Pole Mounting Ring

- Power cord & POE Injector

Warning:

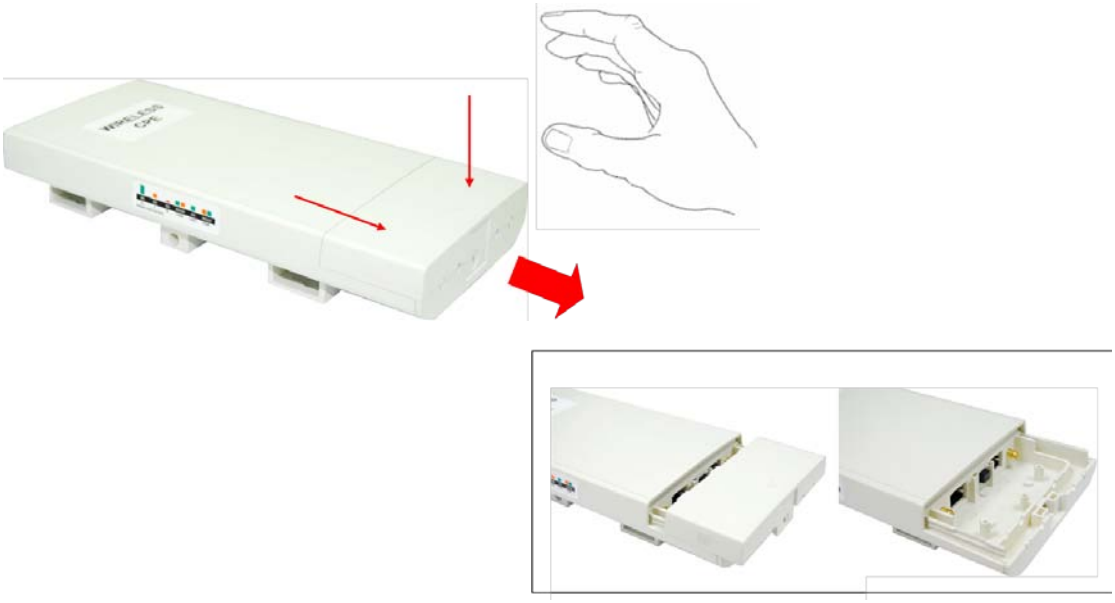
Users MUST use the “Power cord & POE Injector” shipped in the box with the CPE.

Use of other options will likely cause damage to the unit.

Chapter 3 System Installation

Connect up

1. The bottom of IEEE 802.11a/n wireless outdoor CPE is a movable cover. Loosen the screw with a Philips screwdriver. Grab the cover and pull it back harder to take it out as the figure shown below.



2. Plug a standard Ethernet cable into the RJ45 port labeled “LAN 1”. Do not plug the cable into the RJ45 port labeled “LAN 2”.

The secondary Ethernet port (labeled LAN 2) is for IP video integration. To use it you need to enable the secondary port in advance before connecting with the IP camera from the CPE's Web Management as shown below.

3. Take out the power cord and POE injector from the gift box, and plug the power cord into the DC port of the POE injector as the below picture shows.

4. Put what in the Step.2 and Step.3 together by plugging the other side of the Ethernet cable in the Step.2 into the POE port of the POE injector in the Step.3. When you finish the Step.4, the set will be like the following picture:

5. Press the black PWR button beside the LAN 1 Ethernet port.

6. Attach and fasten the removable cover to the bottom of the unit with the screw.

7. Power on the IEEE 802.11a/n Wireless Outdoor CPE by plugging the power adapter to the power socket.

Using the External Antenna

The IEEE 802.11a/n Wireless Outdoor CPE provides two reverse SMA antenna connectors if you prefer to use an external MIMO antenna for your application instead of the built-in directional antenna, please follow the steps below.

1. Remove the two plugs as circled below:

2. Connect your external antenna to the SMA-type connectors on the bottom of the CPE.

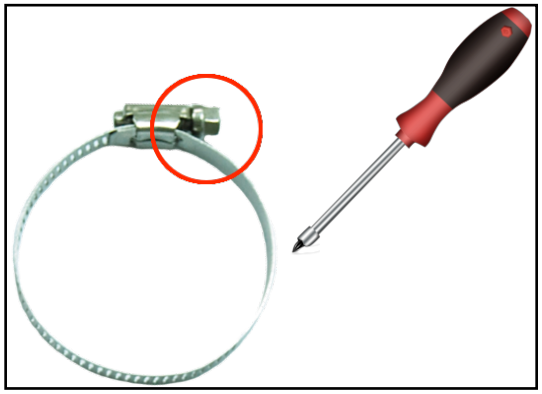
Warning:

- Users MUST power off the CPE first before connecting the external antenna to it. Do not switch from built-in antenna to the external antenna from WEB management without physically attaching the external antenna onto the CPE; otherwise, damage might be caused to the unit itself.

Follow the steps described in **Connect Up** to finish the installation.

Pole Mounting

1. Turn the CPE over. Put the pole mounting rings through the middle hole of it. Note that you should unlock the pole mounting ring with a screw driver before putting it through the CPE as the following right picture shows.



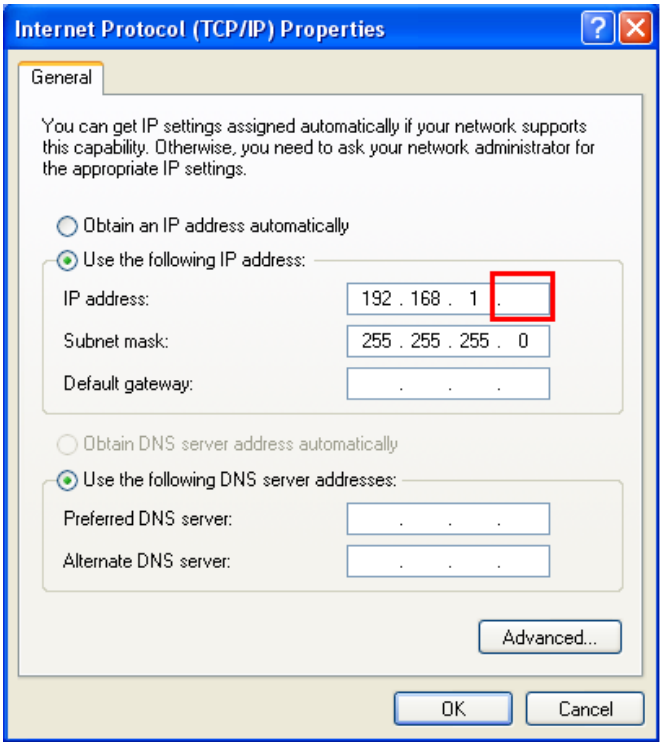
2. Mount the IEEE 802.11a/n Wireless Outdoor CPE steadily to the pole by locking the pole mounting ring tightly.

Now you have completed the hardware installation of the IEEE 802.11a/n Wireless Outdoor CPE.

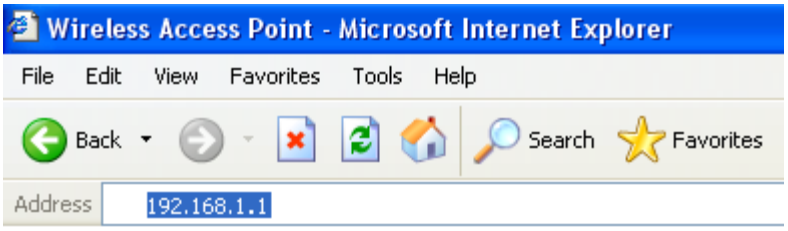
Chapter 4 Configuration

Connect the IEEE 802.11a/n Wireless Outdoor CPE with your PC by an Ethernet cable plugging in LAN port of POE injector in one side and in LAN port of PC in the other side. Power on the CPE by POE from the supplied POE injector and press the black power button beside the LAN1 port.

1. Assign a static IP address to your PC which should be in the same network segment with the CPE. As the default IP address of the CPE is 192.168.1.1, you may choose from 192.168.1.2 to 192.168.1.254. Then click **OK**.


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
192 . 168 . 1 .
Subnet mask:
255 . 255 . 255 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

2. Open the web browser on your PC, key in the IP address (192.168.1.1) of the CPE in the address bar, and then press **Enter**.



3. Now, you will see the log-in page of the CPE. The default Name and Password are “admin” and “password” respectively. Enter the password and then click **Login**.

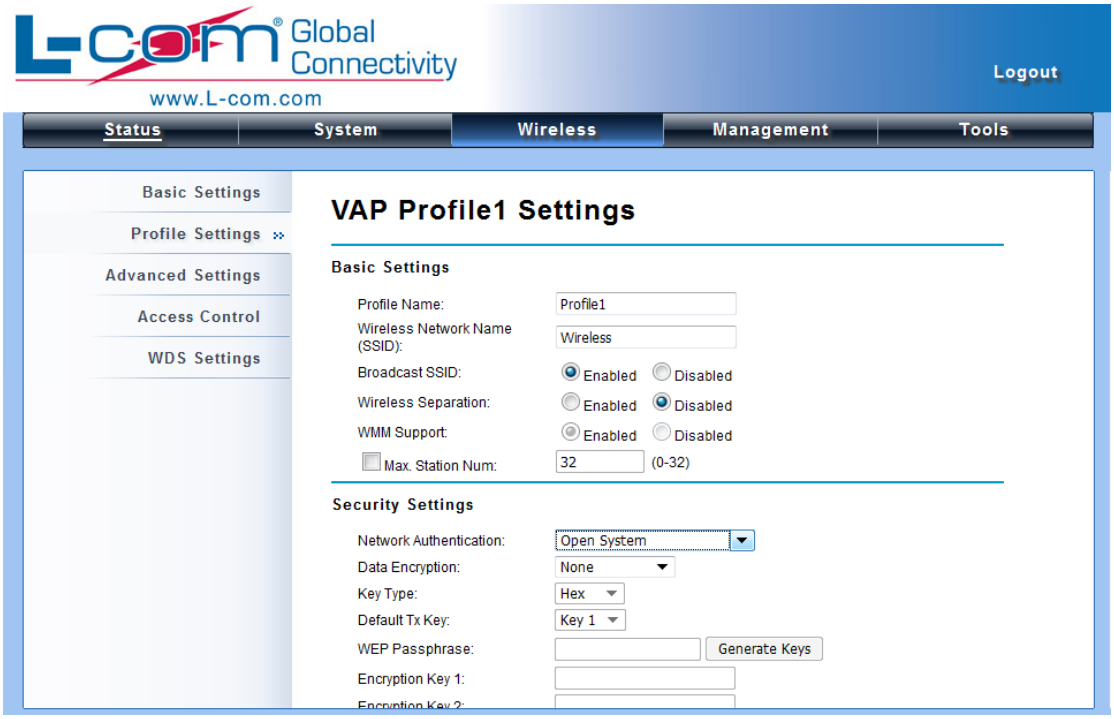
* Since the CPE covers “AP mode” as well as “CPE mode”, the following steps are categorized for convenience reading to describe how to set each mode after successful log-in.

AP Mode

1. Choose **Wireless > Basic Settings**. Then you will see the “**Basic Settings**” page. The default is AP mode already. Here, you can set the parameters to optimize your application, or you can leave them as the default. Click “**Apply**” to save the parameters. In addition, for better coverage of the AP, you may also use external MIMO antennas; if so, remember to set the antenna setting from “Internal (16 dBi)” to “SMA Connector” after your external antennas are physically installed.

   Warning: Do not switch from built-in antenna to the external antenna from WEB management without physically attaching the external antenna onto the CPE; otherwise, damage might be caused to the device itself.

2. If security is required, open **Wireless > Profile Setting** and enter "**VAP Profile 1 Settings**" as below. You may set the parameters like "Network Authentication" and "Data Encryption" for more secure network communication in your application. Click **Apply** to save the parameters.



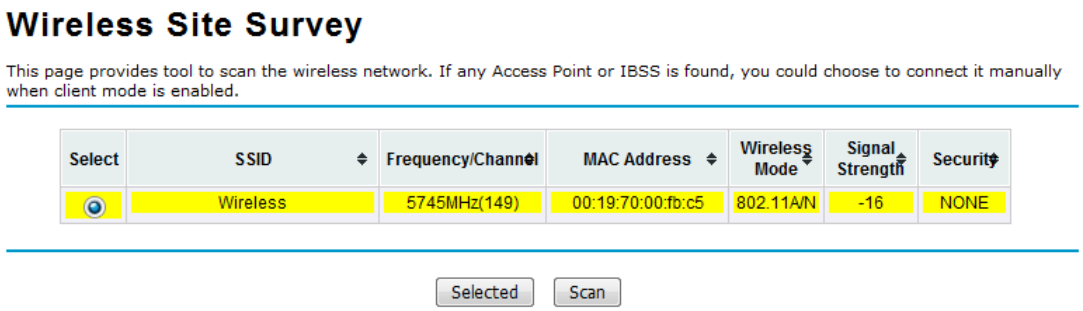
Wireless Client Mode

1. Choose **Wireless > Basic Settings**. Then you will see the "**Basic Settings**" page. Choose "Wireless Client" from Wireless Mode, and click "**Apply**" to save it. Feel free to change the other parameters to optimize your application before clicking **"Apply**".

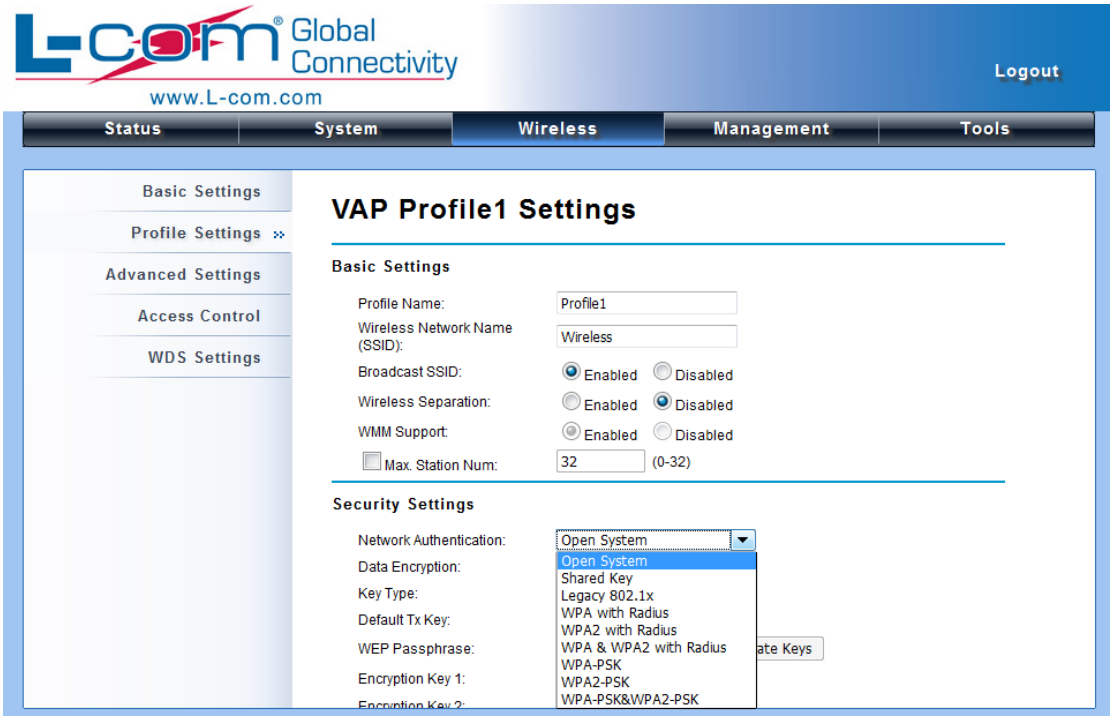
   Note: For longer transmission of the CPE, you may also use an external antenna; if so, remember to set the antenna setting from "Internal (16 dBi)" to "SMA Connector" after your external antenna is successfully installed.

   Warning: Do not switch from built-in antenna to the external antenna from WEB management without physically attaching the external antenna onto the CPE; otherwise, damage might be caused to the device itself.

2. Click the "**Site Survey"** button beside **Wireless Mode**. It will scan all the available access points within coverage. Select the one you prefer to connect to, and click **Selected** to establish the connection.

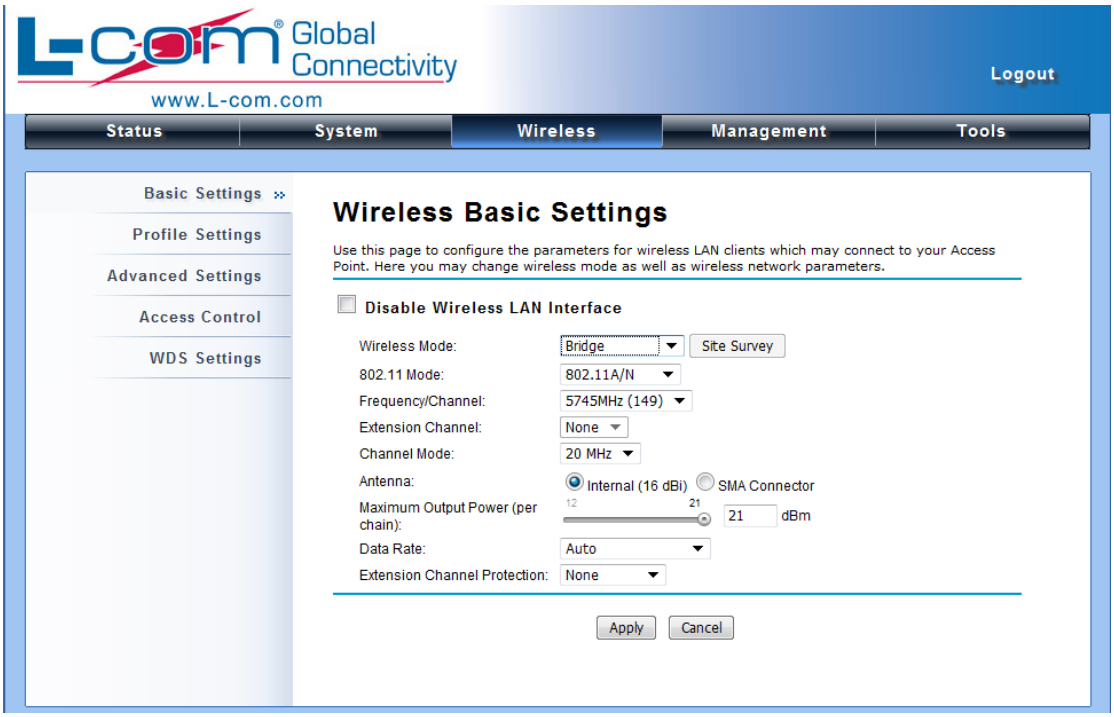


3. If the AP you connect to require authentication or encryption keys, click **Profile Settings** in the left column, fill out the corresponding items, and click " **Apply**" for data encryption.



Bridge Mode

1. Open "**Basic Settings**" in "**Wireless**". From **Wireless Mode**, select "**Bridge**" and click "**Apply**" to save settings.



2. Go to "**WDS Settings** " in "**Wireless**", input the MAC address of the remote bridge to "**Remote AP MAC Address 1**" field and click "**Apply**";

Global Connectivity
www.L-com.com
Logout
Status
System
Wireless
Management
Tools
Basic Settings
Profile Settings
Advanced Settings
Access Control
WDS Settings
WDS Settings
Wireless Distribution System uses wireless media to communicate with other APs, like the Ethernet does. To do this, you must set these APs in the same channel and set MAC addresses of other APs which you want to communicate with in the table and then enable the WDS.This function can work only in Bridge and AP Repeater mode.
WDS Separation: Enabled Disabled
Local MAC Address: 00:19:70:00:fc:60
Remote AP MAC Address 1: 00:19:70:00:fc:66
Remote AP MAC Address 2:
Remote AP MAC Address 3:
Remote AP MAC Address 4:
Apply
Cancel

Note:

Bridge uses the WDS protocol that is not defined as the standard thus compatibility

issues between equipment from different vendors may arise. Moreover, Tree or Star shape network topology should be used in all WDS use-cases (i.e. if AP2 and AP3 are specified as the WDS peers of AP1, AP2 should not be specified as the WDS peer of AP3 and AP3 should not be specified as the WDS peer of AP2 in any case). Mesh and Ring network topologies are not supported by WDS and should be avoijded in all the use cases.

3. Repeat the above procedures to configure the remote IEEE 802.11a/n Wireless Outdoor CPE.

4. Use ping to check whether the link between the two bridges is OK.

5. To get a better wireless connectivity, antenna alignment is strongly recommended after both bridges are installed long distance apart.

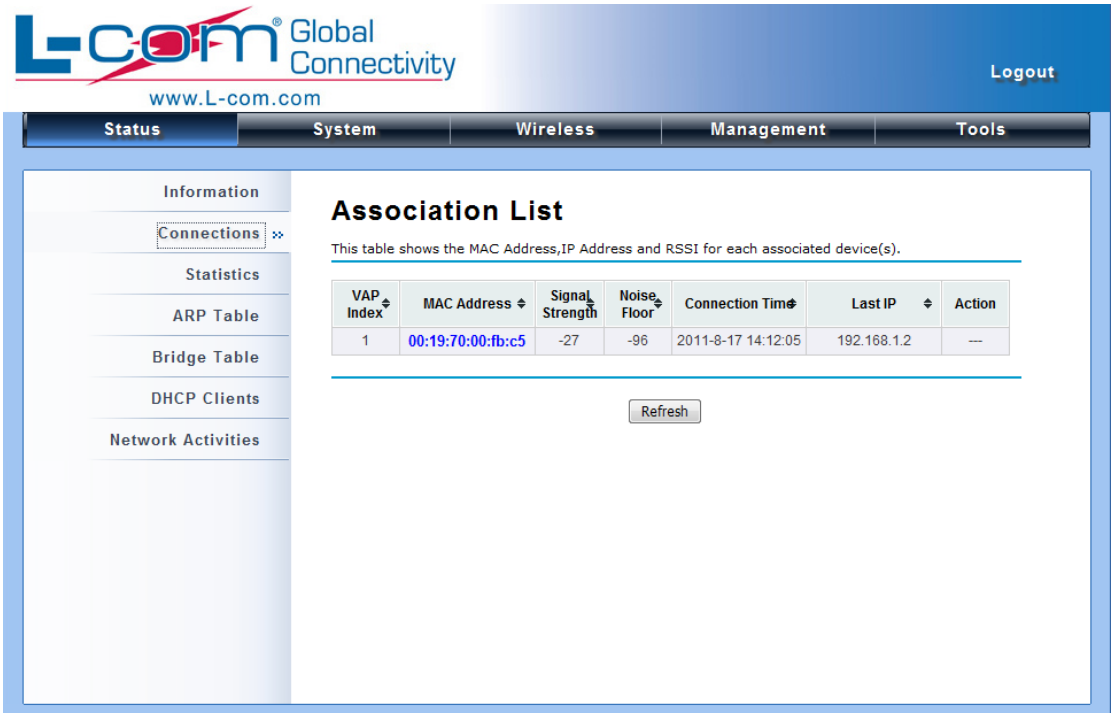
6. Open "**Antenna Alignment**" in **Tools**. Choose the remote peer and click on the "**Start"** button.

7. Wait about 5 seconds, the antenna alignment starts and performs alignment every one second.

8. Fix the local antenna and adjust the remote antenna elevation and horizontal direction.

During the adjustment, observe “**Current RSSI**” and “**Signal Strength**” in local bridge. The value will refresh every 1 second. Fix the remote antenna when it reaches your expectation. Usually, RSSI between -50 to -70dBm indicates rather good signal strength.

9. Adjust the local antenna after fixing the remote one. During the adjustment, observe “**Current RSSI**” and “**Signal Strength**” in the remote bridge. Fix the local antenna when it reaches your expectation. Under AP/CPE mode where Antenna Alignment Tool is not available, another option is provided to check the signal strength towards the connecting AP/CPE. Open “**Connections**” in “**Status**” as below, and click “**Refresh**” to view the current signal strength of wireless connectivity. If the signal is not so good, align the antenna manually.

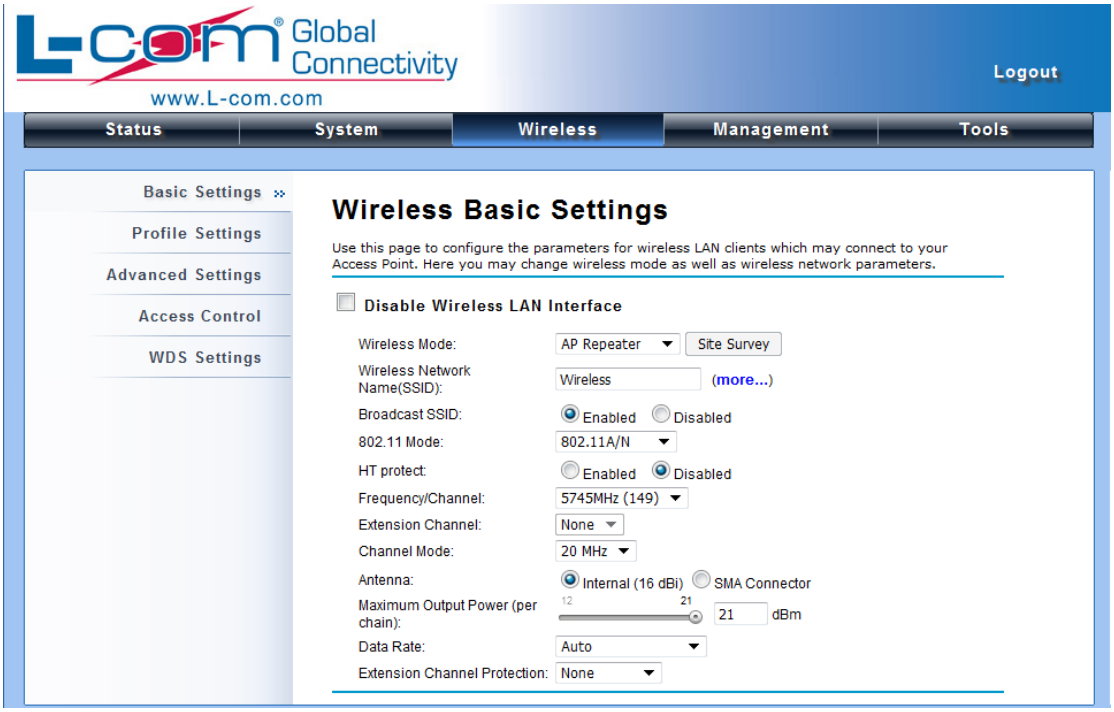


AP Repeater Mode

1. Choose **Wireless > Basic Settings**. Choose “**AP Repeater**” from Wireless Mode, and click **Apply** to save it. Feel free to change the other parameters to optimize your application before clicking **Apply**.

Note:

- For longer transmission of the IEEE 802.11b/g/n Wireless CPE, you may also use an external antenna; if so, remember to set the antenna setting from “Internal (16 dBi)” to “SMA Connector” after your external antenna is successfully installed, otherwise **do not** switch to “SMA Connector)” without physically attaching the external antenna, otherwise, damage might be caused to device itself.


L-com Global Connectivity
www.L-com.com
Logout
Status
System
Wireless
Management
Tools
Basic Settings
Profile Settings
Advanced Settings
Access Control
WDS Settings
Wireless Basic Settings
Use this page to configure the parameters for wireless LAN clients which may connect to your Access Point. Here you may change wireless mode as well as wireless network parameters.
Disable Wireless LAN Interface
Wireless Mode: AP Repeater Site Survey
Wireless Network Name(SSID): Wireless (more...)
Broadcast SSID: Enabled Disabled
802.11 Mode: 802.11A/N
HT protect: Enabled Disabled
Frequency/Channel: 5745MHz (149)
Extension Channel: None
Channel Mode: 20 MHz
Antenna: Internal (16 dBi) SMA Connector
Maximum Output Power (per chain): 12 21 21 dBm
Data Rate: Auto
Extension Channel Protection: None

2. To establish point-to-point bridge connection, please follow the procedures described in **Bridge Mode**. To connect the wireless client to the AP, please follow the procedures described in **Wireless Client Mode**.

Congratulations! You have primarily completed configuration on the IEEE 802.11a/n Wireless Outdoor CPE and they can be put into operation. For more advanced configurations, please refer to the User manual.